Improving Calcium Intake Among Elderly African Americans: Barriers and Effective Strategies

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The objectives of this pilot study were to identify barriers to and informed strategies for improving calcium intake among elderly African Americans. To accomplish these objectives, researchers recruited 56 seniors (age 60 or older) from a congregate meal site in a large urban senior center in the mid-South region of the United States. In focus group discussions, participants answered questions related to food preferences, calcium intake, motivations, and barriers to calcium intake, as well as recommended educational strategies. Researchers used both quantitative and qualitative methods to evaluate the data. The study revealed eight barriers to dietary calcium intake: concern for health and disease states, lack of nutrition knowledge, behaviors related to dairy products, limited food preferences, financial concerns, lack of food variety, food sanitation concerns, and limited food availability. Participants suggested several educational strategies, including group discussions, taste-testing sessions, and peer education at various locations. Other suggestions were direct mail, television, and newspapers with large print text and colorful depictions of diet-appropriate ethnic foods. Focus group interactions are excellent means of eliciting nutrition-related opinions from African-American elders.

The results of the Third National Health and Nutrition Examination Survey (NHANES III) (Alaimo et al., 1994) agree with the conclusions of other studies that the calcium intake of many African Americans is below recommended levels (National Research Council, 1989) and especially below the new calcium goals (Dietary Reference Intakes) for the American population (National Academy Press, 1997; Yates, Schliker, & Suitor, 1998). The limited intake of calcium by African Americans places this subgroup of the American population at risk for chronic diseases that may be alleviated by achieving adequate calcium. Although many African Americans consume milk, the consumption of dairy products—a major source of calcium in the United States—by African-American men and women is significantly lower than that of White men and women (Shimakawa et al., 1994; Koh & Chi, 1981). Osteoporosis associated with calcium-intake deficiencies and possibly hypertension contributes to the high cost of medical care in the United States (Riggs, Peck, & Bell, 1991; Joint National Committee, 1993).

Prevalence of deficiencies in lactase, an enzyme required to metabolize the primary milk sugar lactose, is blamed for the low intake of dairy products among African Americans (Pollitzer & Anderson, 1989). Although the consumption of milk and dairy products is inadequate in terms of calcium intake, nutrient supplementation is not a solution for many African Americans. Results from the 1992 National Health Interview Survey Epidemiology

Supplement (Slesinski, Subar, & Kahle, 1996) indicate that of the 1,353 Blacks surveyed, three-fourths (77.2 percent) seldom or never used any vitamin and mineral supplement, less than 5 percent (4.4 percent) used supplements occasionally, and 18.4 percent used them daily.

Commonly called the "silent disease" because pain or symptoms are not experienced until a fracture occurs, osteoporosis is a metabolic bone disease characterized by low bone mass, which makes bones fragile and susceptible to fracture. While African-American women tend to have higher bone mineral density than White women have, they are still at significant risk of developing osteoporosis. Furthermore, as African-American women age, their risk of developing osteoporosis more closely resembles the risk among White women. So, as the number of older women in the United States increases, an increasing number of African-American women with osteoporosis can be expected (National Institutes of Health, 1998).

Background

The literature is replete with studies indicating that calcium intakes of African Americans are below the recommended dietary guidelines (e.g., Alaimo et al., 1994), as well as the new calcium intake standards set by the Institute of Medicine (National Academy Press, 1997). In addition to verifying the poor status of calcium intake among African-American adults, much of the literature focuses on the dichotomy of lactose intolerance and bone densities of African Americans. Lactose intolerance is thought to be the primary barrier to consumption of milk and dairy products among African Americans (Buchowski, Semenya, & Johnson, 2002). The empirical work on lactose intolerance among African Americans, however, does not establish that African Americans choose not to consume milk because of gastro-intestinal distress. Researchers have found that lactose intolerance among some African Americans may be overestimated because of lactose digesters' belief that consumption of milk leads to this distress (Johnson, Semenya, Buchowski, Enwonwu, & Scrimshaw, 1993). Even with lactose intolerance, small quantities of milk can be consumed with little or no discomfort, and specialty milk products and lactase tablets are available to ameliorate the symptoms related to lactose consumption. In addition, promising dietary management strategies are available, such as consuming lactose-containing dairy foods more frequently and in smaller amounts as well as with meals, eating live culture yogurt, using lactose-digestive aids, and the consumption of calcium-fortified foods (Jackson & Savaiano, 2001).

The other side of the dichotomy is bone mineral density and osteoporosis. A major reason for the sense of security regarding calcium-intake research may be the higher bone mineral density of African-American women (e.g., Luckey et al., 1989) coupled with their lower rates of osteoporosis. The implications are that high bone mineral density will protect African Americans from osteoporosis and symptoms of calcium deficiency. Silverman and Madison (1988) found that the incidence of age-adjusted fracture rates for non-Hispanic White women is greater than twice the rate for African Americans. But low risk does not translate into no risk. A fact sheet from the National Institutes of Health (1998) states that

> [A]pproximately 300,000 African-American women currently have osteoporosis; between 80 and 95 percent of fractures in African-American women over 64 are due to osteoporosis; African-American women are more likely than White women to die following a hip fracture; as African-American women age, their risk of hip fractures doubles approximately every 7 years; [and] diseases more prevalent in the African-American population, such as sickle-cell anemia and systemic lupus erythematosus, are linked to osteoporosis.

Some researchers have developed a prudent approach to this dichotomy. One group concluded that the "higher values of bone densities in African-American women, compared with White women are caused by a higher peak bone mass, as a slower rate of loss from skeletal sites comprised predominantly of trabecular bone. Low-risk strategies to enhance peak bone mass and to lower bone loss, such as calcium and vitamin D augmentation of the diet, should be examined for African-American women" (Aloia, Vaswani, Yeh, & Flaster, 1996). To promote higher intakes of calcium more effectively, researchers and nutrition educators need to know more about food practices in relationship to dietary calcium. However, little information is available on the effect that food practices of older African Americans may have on nutrient intake, particularly calcium (Cohen, Ralston, Laus, Bermudez, & Olson, 1998).

The Council on Aging's congregate meal feeding program is an excellent means of studying the problem of dietary calcium barriers among African-American elders. Even though the Council's meals provide one-third of the RDA for all nutrients, African-American participants consumed less calcium, thiamin, iron, fat, carbohydrate,

fiber, niacin, and vitamin C than did White participants (Holahan & Kunkel, 1986).

The purpose of the current pilot study was to examine the barriers to adequate calcium intake, through focus group discussions, among the African-American elderly population that participates in the congregate meal program. The information from this study is needed to prepare effective, relevant, and appropriate nutritional education presentations and materials.

Methods

Participant Recruitment

In the mid-South region of the United States, researchers recruited participants from a congregate meal site in a large urban senior center. Researchers held a recruitment session during which they explained the project's focus, time commitment, and purpose to potential participants; scheduled participants for the focus group sessions; and distributed appointment cards. Upon completing all focus group sessions, participants received a $15 gift certificate to a local grocery store. The researchers completed the official recruitment process in 1 day; however, the participants, without prompting, recruited others. Only African-American elders 60 years and older participated in this study.

Assessment Instruments

The assessment instruments consisted of the Demographic and Calcium Intake Questionnaire (DCIQ) (Fleming & Heimbach, 1994) and the focus group questions (box 1). In addition to collecting demographic data, researchers used the DCIQ to assess participants' food preferences in relationship to dairy and calcium-containing foods. To make the focus group procedures and questions more reliable and while taking into account the age and cultural differences of elderly African Americans, the researchers used a dietary calcium intake questionnaire developed for low-income Vietnamese mothers (Reed, Meeks, Nguyen, Cross, & Garrison, 1998). For example, where Reed and colleagues emphasized Asian cultural references, the researchers substituted African-American cultural references and maintained the theoretical framework of the original template, which was based on the PRECEDE-PROCEED model (Green & Kreuter, 1991). This model has three central components related directly to the types of questions raised during a focus group discussion that seeks to understand how to address, in a better fashion, dairy calcium needs through nutrition education: (1) predisposing (knowledge, attitudes, and motivations), (2) enabling (resources and skills), and (3) reinforcing (praise and perceived benefits). Based on the recommendations of Krueger (1998), the researchers interspersed these questions within the procedural framework described in box 1.

Procedures for Data Collection and Data Analysis

Each of the six focus groups was limited to no more than 12 participants, and each session lasted no longer than 1½ hours. A total of 56 African Americans participated. At the beginning of each focus group session, the researchers obtained a written consent from each participant. Before group discussions began, the researchers administered the DCIQ to participants and offered assistance if needed. To help participants become comfortable, the researchers asked each to "tell us your name, and tell us what your favorite food is." To transition to the discussion, the researchers asked participants to talk about some of the good points about their diet and how they would improve their diet.

Participants considered milk good for bones and teeth and were concerned about bone health and disease prevention in spite of being unable to describe calcium-related deficiency diseases.

Box 1. Focus group transition statements and questions[1]

Transition	*The USDA Food Guide Pyramid recommends that adults consume milk and dairy products every day.*
Key Questions #1	What dairy products do you commonly consume? How often do you have foods in this group? Which of the dairy foods do you select when you eat away from home? What things hinder you from eating these foods more often? What keeps you from ordering milk and dairy products when you eat away from home? As you see it, what is the relationship of milk and health? What people or materials helped you develop your viewpoint?
Key Questions #2	Foods in the milk and dairy group are high in calcium. Calcium helps prevent several diseases: thinning of the bones or osteoporosis; high blood pressure or hypertension; and weak bones or rickets. What have you heard about these diseases? What would you like to know about these diseases? How does knowing about diseases related to poor calcium intake impact your diet choices? What would motivate you to eat more of the foods in the dairy group?
Transition	*So, you are saying that milk is important because of the nutrients it provides such as calcium.*
Key Questions #3	Here is a list of foods with their calcium content. What are your impressions of this list? So you eat several of these foods, what keeps you from purchasing/eating other foods on the list? What would motivate you to eat other foods that contain calcium? Think about the last time you tried something you never tried before. How did you go from never eating it to having tried it? How do your friends and family influence the foods you buy or prepare?
Transition	*So, what I am hearing is that your friends and family impact your food choices.* *When you think back on it, how much does your family influence the foods you buy or prepare?*
Key Questions #4	What are your thoughts about what your grandchildren need in terms of milk and dairy foods? Where do you like to get nutrition information? What is your impression about food labels? Are there places or people who don't provide nutrition information that you would like to hear from? What nutrition information do you get from the following materials or places: brochures, reading materials, recipes high in calcium, grocery store lists, foods to select in a restaurant, signs, community classes—in the library, community center, and/or church? What are appealing and convenient ways for us to provide you with information about foods and nutrition? What is your impression of the "Got Milk" signs? What is your family and grandchildren's impressions of the posters? What would you like to know about calcium, milk, and dairy foods? How much time would you like to spend learning about calcium?

[1]Krueger, 1998; Reed et al., 1998.

Researchers used the focus group discussion questions to identify the barriers to calcium intake. This discussion was followed by a transition to the key questions. The first and second sets of key questions focused on current dietary behavior and predisposing factors, respectively; the third set focused on reinforcing factors. Finally, the fourth set of key questions focused on enabling factors. Researchers combined the last two sets of questions to determine educational strategies. One additional question in this combined set focused on participants' opinion about their grandchildren's need for milk and dairy products. To close the discussion, researchers asked the participants to give any advice that would help African Americans increase the calcium content of their diets.

Both quantitative and qualitative procedures were used to analyze the data. The Statistical Package for the Social Sciences (SPSS, 1999) was used to analyze the descriptive data; frequencies were determined for food preferences and the demographic variables. The models were used to analyze the qualitative data: (1) the inductive data analysis model identified topics, categories, themes, and concepts as a means of bringing forth knowledge (McMillan & Schumacher, 1997) and (2) the PRECEDE-PROCEED model was used to subdivide the knowledge gained into categories (Green & Kreuter, 1991).

Researchers completed and compiled the qualitative data in the form of tape recordings and handwritten notes. During analysis, the researchers reviewed both the notes and the tapes from each focus group session and then used the tape recordings to complete the notes. Next, researchers identified barriers, placed the individual barriers into categories, and organized the categories into patterns or themes and concepts (e.g., related to a predisposing or an enabling factor).

Results and Discussion

The focus group attendance was excellent, with only six no-shows. Six other participants attended a focus group session other than the one they had originally planned to attend. By casual observation, we noted that all but two of the participants appeared to be able-bodied: one revealed a hearing loss and one used a walker. Even though over half (n=28) of the African-American seniors in this study reported income below the poverty index (Annual Update of the HHS Poverty Guidelines, 1999), finances were rarely mentioned as a barrier to adequate calcium intake in the focus groups. These seniors seemed adept at managing their finances, and 40 percent used resources other than congregate meals, frequently citing commodity foods as supplements to their food budgets.

Most African-American participants (84 percent) agreed to provide demographic information (table 1). Six of ten participants had less than a high school education, about 6 of 10 had a monthly income of less than $700, and about 6 of 10 were not receiving food assistance. Almost three-quarters of the participants were single, separated, divorced, or widowed; over half (57 percent) lived alone. Most of the 56 participants (n=47) completed the food preference survey, which indicated that greater than 90 percent of the respondents liked and ate milk and dairy products as well as some other foods with moderate or high amounts of calcium (e.g., salmon with bones). However, some participants, while reviewing a list of calcium-containing foods, noted unfamiliarity with relatively new products such as tofu. In terms of general categories of calcium-containing supplements (calcium, antacids, or vitamins and minerals), 83 percent of the participants reported using supplements of various types daily, weekly, or seldom. Fifty-five percent reported taking at least one of the calcium-containing supplements daily, 13 percent reported using calcium supplements or other antacids (e.g., Tums), and 49 percent reported using vitamin-mineral supplements (data not shown).

Focus group discussions revealed a list of barriers to calcium intake among African-American seniors:

- concern for health and disease states
- lack of nutrition knowledge
- behaviors related to dairy products
- limited food preferences
- concerns about finances
- lack of food variety
- concerns about food sanitation
- limited food availability

Two subcategories represented the barriers: predisposing factors and enabling factors. Researchers identified four types of barriers related to predisposing factors: customs and beliefs, food handling/sanitation, nutrition knowledge, and health reasons/disease state/food intolerance. Researchers also identified four types of barriers related to enabling factors: food preferences, financial issues, food variety and availability, and behaviors. In terms of food preferences, the participants discussed the need to learn to eat and learn to like new foods to increase calcium intake. Participants identified

Table 1. Demographic characteristics of African-American seniors

Variables	Percent
Educational level[1]	
<8th grade	40.4
9th-11th grade	19.1
12th grade	31.9
Technical school	12.7
Some college	4.3
College degree	4.3
Monthly income	
$687 or less	55.3
$688-$922	23.4
$923 or more	21.3
Food assistance[2]	
Yes	40.4
No	59.6
Marital status	
Single, separated, divorced, widowed	72.3
Married	27.7
Gender	
Male	13.0
Female	87.0
Living situation	
Lives alone	57.4
Lives with spouse	27.7
Lives with other	14.9

[1]Participants selected all that applied. For example, a participant that completed 12th grade and technical school may have selected both categories.
[2]Participants' most frequently reported food assistance was commodity foods.
n = 47.

several marketing and educational strategies to improve the calcium nutrition knowledge of the African-American population. Although most participants had less than a high school education, they were articulate and participated actively in the focus group discussions. The only physical barrier mentioned in the focus groups was digestive problems, which is different from the findings of others (Fischer & Johnson, 1990; Skaien, 1982). These researchers had shown physical barriers to be a substantial cause of nutritional deficiencies.

Demographic Data and Food Preference

For these participants, fruits, vegetables, grains, and desserts were the favorite foods. The frequency data derived from the demographic survey supported these statements and revealed that almost 90 percent of these participants liked and ate food from all food groups. Several of the participants stated that collard or mustard greens were a favorite food. Of those that mentioned greens as a favorite food, several said they not only ate greens for dinner but sometimes for breakfast or lunch as well.

Because salmon was the only meat mentioned in the frequency data, meat preferences were not determined. On the frequency checklist, the participants indicated whether they liked or ate dairy products, but these items were not mentioned as favorite foods in the focus group discussions. When the moderators probed about dairy foods, many participants indicated they did not like the taste of the foods or they had been instructed to eliminate them from their diet for health/disease reasons. These participants did not mention total avoidance of calcium-rich foods.

Barriers to Calcium Intake

One of the challenges for understanding and discussing the barriers to calcium intake among the urban African-American elders is the interaction among factors. For example, lack of nutritional knowledge may interact with health status and disease state. Alternatively, concern for food handling and sanitation can interact with food preferences and selections. Overall, barriers discovered during this investigation are similar to the barriers identified by Zablah, Reed, Hegsted, and Keenan (1999) when they interviewed 90 African-American women who were either pregnant or had children 5 years old or younger. Zablah and colleagues found that participants perceived they consumed enough calcium, disliked the taste of some calcium-rich foods, experienced digestion problems, had a perceived lack of knowledge of products containing calcium, and were concerned about cholesterol and the high-calorie content of these foods. Thus, both the mothers of young children and elderly African Americans have concerns related to dietary calcium intake and food sources of calcium.

Barriers Related to Predisposing Factors

Customs and beliefs. In general, participants considered milk a healthful food, connected with cows and wonderful family memories. For example, one participant stated, ". . . [B]eing raised on the farm, we had to milk the cows. So we knew that was good. We always knew. My daddy insisted that we drink milk." A participant even considered milk a healing food, having recommended milk as a food to a convalescing friend. This friend, a member of the same focus group as the participant, testified that she now drinks milk daily. However, participants discussed the image of milk as a child's food as well, associating the "Got Milk" campaign with children. Calcium requirements were not mentioned in the context of a chronic disease state or as a religious dietary restriction. (In a similar focus group held with Women, Infants, and Children Program participants, one mother mentioned her plans to eliminate milk from the diet of an elementary school-age child because of her religious beliefs [unpublished data].) Participants suggested milk as an aid for acute problems, such as ankle problems and "popping bones," described as "bones that don't act right."

Food and nutrition knowledge. Participants in the focus group discussions wanted information about nutrition and calcium. Participants considered milk good for bones and teeth and were concerned about bone health and disease prevention in spite of being unable to describe calcium-related deficiency diseases. However, one participant discussed her bout with osteoporosis, and the pain and discomfort involved with this debilitating disease. Additional examples of basic lack of knowledge included calcium content of foods and complications related to poor calcium intake. Participants also confused eggs with dairy products. In addition, although participants correctly identified milk and cheese products as containing cholesterol, they failed to identify lowfat milk and cheese products as appropriate dietary modification for those concerned with dietary cholesterol. For example, one participant stated, "Well, I like cheese, but you know they say cheese is so bad for you now for cholesterol. So I don't eat too much cheese."

The discussions revealed that participants were surprised that greens were a source of calcium. When moderators provided the participants with a list of calcium-rich foods that included greens (100 mg calcium per ½ cup serving), many said they were unaware that

greens were a good source of dietary calcium. One participant commented, "I didn't know [turnip greens] had calcium. I know I love them." In addition to greens, participants seemed surprised to learn about the high calcium content of many foods, such as sardines with bones, prunes, broccoli, spinach, and tofu. Although the basis of such confusion may be lack of nutrition knowledge, the confusion may also relate to how health care professionals organize nutrition knowledge. It is possible that the issue of food categories in terms of nutrients may represent a difference in the organizational schema of nutritional sciences based on nutrients, while that of the participants' knowledge may be based on other factors. Krall, Dwyer, and Coleman (1988) said it this way:

> [A] person's memory is likely to follow personal schemes such as food combinations, time, location, etc. The categorization scheme, such as nutrient-related groups, is not well understood by most lay persons, [and is] therefore, alien to the manner in which [their] information was stored, [and] imposes an arbitrary structure which potentially leads to inefficient recall.

In addition, concerns about food handling and sanitation practices of food service establishments served as a deterrent to ordering milk as a beverage when eating out.

> "Now, I wouldn't order milk out—because I use to work at a restaurant . . . . If they bring [milk] to me in a glass, I wouldn't drink it. [Researcher: How come?]. . . Well, we had a keg. And, everyone would dip their hand down in that keg, and they'd want the employees to drink that milk, . . . Well, we *could* get milk [from] the dining room, but the other help had to get milk from . . . that keg, and I didn't think that was right."

Health reasons, disease state, and food intolerance. Many of the participants were concerned about health and disease-related issues. They were especially concerned with heart disease, high blood pressure, high cholesterol, and arthritis. Previous research also found similar health concerns in rural African-American elderly (Lee, Templeton, Marlette, Walker, & Fahm, 1998; Wallace, Fox, & Napier, 1996). As one participant in the 1996 study commented: "I drink a little milk, . . . I can't handle milk too good unless I'm at home." Thus, participants in the 1996 study sometimes tied these concerns to food restrictions, especially when their physician instructed them to eliminate certain foods from their diets. The participants reported being educated by their physician or nurse (none mentioned a dietitian) about which foods to avoid. Participants often followed medical recommendations to avoid or restrict a food group that was a calcium source without any instruction on how to replace the calcium in their diet.

In terms of lactose intolerance, symptoms mentioned included flatulence, and stomach problems. Participants also mentioned that dairy products, such as milkshakes, were "too rich for the system," although this could be related to the fat or sugar content. Generally, participants did not specifically mention dietary strategies for managing lactose intolerance, such as consuming yogurt or acidophilus milk or using lactase tablets. However, one participant mentioned the lack of lactose-free products as a barrier to purchasing dairy products in food service establishments.

The focus group participants expressed an interest in all types of educational media including direct mail, television, radio, newspapers, and magazines.

Among the elderly, the perception of milk intolerance appears to vary with ethnicity and gender. Elbon, Johnson, Fisher, and Searcy (1999), in a national telephone survey of 475 older American participants, including 27 African Americans, found that 35 percent of the African-American respondents considered themselves milk intolerant, whereas only 17 percent of the Whites did so. Twice as many women (21 percent) considered themselves milk intolerant than did the men (10 percent). Others found similar avoidance based on perception (Buchowski, Semenya, & Johnson, 2002).

Barriers Related to Enabling Factors

The barriers related to enabling factors were food preferences, financial issues, food variety and availability, and behaviors related to calcium-containing foods. In terms of food preferences, to help improve calcium intake, the participants discussed the need to learn to eat and enjoy new foods and learn how relatives, friends, and interactions at social gatherings (e.g., at church) influenced their food choices by introducing new foods. (Participants demonstrated a willingness to try the calcium-fortified juice provided as a snack during all focus group discussions.)

Subjects participated in the tradition of extended family members influencing food choices by encouraging their grandchildren to drink milk. One subject told the story of how she learned to eat broccoli:

> "This broccoli, I never was too fond of it, but my son-in-law, when they were living here in town, use to cook dinner on Sundays and invite me over. And he would fix the broccoli. I didn't want to hurt his feelings. So I started eating broccoli, and sometimes I get it . . . when I go out, 'cause I don't do too much cooking at home. But, I'll eat the broccoli especially, you know, with some cheese on it."

In addition, the participants seemed to categorize foods into good and bad foods as well as in terms of a disease-based model, that is, to eliminate foods due to a disease.

Some participants mentioned financial concerns as a barrier to intake of milk products. Financial issues related to the cost of food are not only a concern among the urban southern elderly African Americans, but also among the rural southern African Americans. Lee and colleagues (1998) found that more than 70 percent of rural African-American elders considered food (and medical) costs to be a serious issue. For example, focus group participants mentioned cost issues as reasons for not ordering milk at a food service establishment.

Participants indicated that availability of some calcium-containing foods might influence consumption (e.g., calcium-containing juice). In terms of behaviors, participants mentioned postponing drinking milk to avoid flatulence during social engagements. This behavior appears to indicate that participants were struggling with how to maintain consumption of dairy products in spite of symptoms of lactose intolerance. In such cases, nutrition education could help the elderly develop more effective strategies for managing lactose intolerance.

Table 2. Marketing and educational strategies for promoting calcium intake suggested by African-American seniors

Strategies	Recommendations
Direct mail	
Media	Brochures Newsletters Magazines Television Radio Newspapers
Informal educational sessions	Tasting parties Focus group discussions Peer education
Location	Senior citizens' center schools Library Grocery store School or family reunions
Desired tactics	Large print text Colorful with pictures Diet-appropriate ethnic foods

n = 56.

Marketing and education strategies

The focus group participants expressed an interest in all types of educational media including direct mail, television, radio, newspapers, and magazines (table 2). They found it enjoyable to learn in social settings, such as community center classes, church meetings, family and class reunions, and the senior citizens' center. Taste-testing sessions in any setting were particularly appealing to the group. Other routes of nutrition education delivery included sessions at the library, food bank, and the commodity food distribution centers. The input from the participants involved in the present study clearly shows that a number of strategies might be successful in increasing African-American seniors' knowledge about adequate calcium intake.

One strategy that has benefitted elders is church-based health promotion. Ransdell (1995) discussed why such promotional strategies have been successful and are appropriate for many elderly. In addition, the comments of African-American caregivers that spiritual activities promote health, as reported in a recent study (McDonald, Fink, & Wykle, 1999), probably reflect the sentiment of many others in the community. While working with urban-dwelling minority elders, Wieck (2000) found that health promotion activities work best when the focus is on small, achievable goals in the context of short-focused educational sessions.

Hurdle (2001) discussed the importance of social support as a component of health promotion activities. Hurdle's report helps, in part, to explain the positive response of the elders to the focus group approach used by this study. The focus group may have helped support "connectedness" (Belenky, Clinchy, Goldberger, & Tarule, 1986), and may help with the sense of community fostered by the center at which the focus groups were conducted. Furthermore, others found that women were more likely than men to participate in health-promoting activities and relaxation, while men were more likely than women to participate in exercise (Felton, Parsons, & Bartoces, 1997). Therefore, gender patterns of response to health promotion should be considered when planning health-promoting activities.

Summary and Recommendations

In this pilot study, focus group interactions were excellent means to elicit African-American elders' opinions about barriers and educational strategies related to calcium intake. The results may not be generally applicable, because they pinpoint the existence of barriers to adequate calcium intake among one group of African-American seniors. Within this group, health/disease states and lack of knowledge appeared to be the primary and secondary barriers reported, respectively. Although similar studies quantify calcium intake in this population, they provide only limited insight of the barriers. Therefore, further studies are necessary to validate the current findings. A future research plan could include correlating calcium intake data with results from focus group discussions.

The participants in the present study provided suggestions that are beneficial for educators who develop materials and methods for nutrition instruction. Specifically, the elderly participants requested disease-specific calcium education directed to their level of learning and that would be provided in a community-based and socially centered environment. The seniors in this study wanted the following information: linkage between calcium sources and specific disease states, calcium content of foods, high-calcium recipes provided in grocery stores at the point of purchase, cooking demonstrations or taste-testing parties featuring calcium-rich foods, and strategies for managing dairy-related food intolerance.

Health care providers, social workers, food assistance program managers, volunteers who work with the elderly, and family members must also be educated on adequate calcium intake for these seniors. Educational programs should concentrate on introducing new foodstuffs into seniors' diets and teaching them to substitute item that have been omitted from their diets for medical reasons with alternative calcium-containing foods. Identification and recognition of calcium barriers should be determined across cultures and age groups, if educators hope to promote adequate calcium intakes.

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